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Nielson et al.

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(54) **PROCESSES FOR MULTI-LAYER DEVICES
UTILIZING LAYER TRANSFER**

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(57) **ABSTRACT**

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A method includes forming a release layer over a donor
substrate. A plurality of devices made of a first semiconductor
material are formed over the release layer. A first dielectric
layer is formed over the plurality of devices such that all
exposed surfaces of the plurality of devices are covered by the
first dielectric layer. The plurality of devices are chemically
attached to a receiving device made of a second semiconduc-
tor material different than the first semiconductor material,
the receiving device having a receiving substrate attached to
a surface of the receiving device opposite the plurality of
devices. The release layer is etched to release the donor sub-
strate from the plurality of devices. A second dielectric layer
is applied over the plurality of devices and the receiving
device to mechanically attach the plurality of devices to the
receiving device.

(65) **Prior Publication Data**

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(52) **U.S. Cl.**

USPC **438/458**; 438/106; 438/455

(58) **Field of Classification Search**

None

See application file for complete search history.

17 Claims, 8 Drawing Sheets

